proposals made in this Bill in our notes columns, but a brief abstract of the memorandum and of the provisions of the Bill may be of interest to readers of NATURE. The paper opens by pointing out that the rapid development of wireless telegraphy which has been and is still going on makes some form of State control practically essential in the interests of the naval and military requirements of the Empire. The United Kingdom stands, in fact, almost alone in not having any such control; in ordinary circumstances the powers of the Postmaster-General do not extend beyond the three-mile maritime limit; although in times of war or emergency the Government can take over the telegraphic business of incorporated companies, this power does not extend to the installations of private individuals. Obviously a private individual, were he maliciously inclined, could cause a great deal of trouble with a wireless telegraphy installation in the neighbourhood of important strategical signalling stations. A certain very limited power of control exists by an arrangement already made with several foreign Powers bv which these Powers undertake not to permit the establishment of systems for communication with the United Kingdom except after consultation with the British Government; this safeguard, such as it is, would naturally fail in the event of war. It is especially in the case of war that control becomes of vital importance, and it is necessary to introduce legislation to meet this event.

The points which have to be particularly considered are :—

(1) That there must be means of preventing information being conveyed to the enemy, and of preserving secrecy as to plans and preparations.

(2) That all possibility of outside interference with Government signalling must be removed.

It is therefore desirable for the Government to have in their power (*a*) the control of the transmission of messages; (*b*) the prevention of the establishment of unauthorised stations; and (*c*) the disposition of stations in the most advantageous way so as to obtain the best results in working, free from interference, accidental or intentional.

In addition to these strategic reasons other considerations make Government control of wireless telegraphy desirable, notably, for example, the advantages to be gained by international agreement on the subject, which at present the British Government could not enter into as it has not the power to enforce any agreement which might be made.

On all these grounds it is proposed in the Bill that the Government shall exercise control by granting licences; these shall be granted by the Postmaster-General, but the consent of the Admiralty and the War Office shall be necessary in order that the strategic considerations may be duly regarded. The Board of Trade is to be added as a third party whose consent is necessary; this is done because the progress of wireless telegraphy affects so closely the trade and commerce of the country. The Bill provides penalties for the unlawful establishment or working of a wireless telegraph station. It is also provided that special licences may be granted by the Postmaster-General for experimental purposes. It is understood that the Government proposes to push the Bill through this session if possible, the reason for its wishing to do so being partly that it may have power to act at the next international wireless telegraph conference, which is to be held early in October, probably at Berlin.

M. S.

NOTES.

A STANDING Committee on machinery designs has been appointed by the Admiralty. Prof. A. B. W. Kennedy, F.R.S., is to act as president of the committee; the other members will be Engineer Rear-Admiral J. A. Smith and Mr. J. T. Milton, chief engineer-surveyor to Lloyd's Register.

A REUTER telegram from Vardö, Norway, states that the relief party of the Ziegler North Polar Expedition arrived at that place on August 3 on board the steamer *Frithiof*. In consequence of fog and ice the *Frithiof* had been unable to establish communication with the expedition on board the *America*. A later telegram states that the *Frithiof* left Vardö on Friday last for Franz Josef Land.

A REUTER telegram from Wellington, New Zealand, reports that the heaviest earthquake for many years was experienced at that place at 10.22 on the morning of August 9. Several public buildings were seriously damaged, and many private firms and householders sustained heavy losses. No loss of life is reported. The shock was felt in both islands. A slight earthquake shock was also felt at Lisbon and its vicinity at 11 o'clock on the night of August 8, but no damage was done.

THE death is announced, at the age of fifty-nine years, of Dr. Carl Weigert, director of the Pathological and Anatomical Institute of Senckenberg.

NEWS of the sudden death, on the Continent, of Sir William Mitchell Banks has been received. Sir William Banks was born in 1842. He was educated at Edinburgh Academy and University, became M.D., and took the university thesis medal in 1864, and in 1899 was made honorary LL.D. He acted for a time as demonstrator of anatomy in the University of Glasgow, and settled in Liverpool in 1868 as a consulting and operating surgeon, being particularly distinguished in cancer research. Dr. Banks, who was knighted in 1899, rendered valuable service as one of the founders of the new Royal Infirmary, Liverpool, in the establishment of University College, and in the movement which resulted in the formation of Liverpool University.

MAJOR RONALD ROSS, C.B., F.R.S., and Dr. Weir Mitchell have been elected foreign corresponding members of the Paris Academy of Medicine.

THE Vienna correspondent of the *British Medical Journal* states that a meeting was recently attended by the Senate of the Vienna University to celebrate Prof. v. Vogl's seventieth birthday, and to bid him farewell on his retirement from the position he has so long held in the university. Prof. v. Vogl's successor has not yet been appointed, but he will, it is thought, probably be one of the retiring professor's former assistants.

THE sixty-first annual congress of the British Archæological Association was opened at Bath on Monday last, and will remain in session until Saturday next.

THE arrangements for the annual meeting of the Society of Chemical Industry, which is to take place in New York from September 7 to 12 next, have now been completed. The president, Sir William Ramsay, K.C.B., F.R.S., is to give an address in the gymnasium of the University of Columbia on September 8, and in the evening of that day the annual dinner of the society will be held at the Waldorf-Astoria. A tour has been arranged, to last from Monday, September 12, until Thursday, September 29, with the object of affording members and guests an opportunity of attending the international congresses in St. Louis during the week beginning Monday, September 19. Among the cities to be visited in the course of the tour are Philadelphia, Washington, Pittsburg, St. Louis, Chicago, Detroit, Buffalo (Niagara Falls), and Boston, the last named to be reached on Thursday, September 29. Ninety-four persons, in addition to those resident in America, have already signified their intention of attending the meetings. Further particulars may be obtained from the general secretary of the society, whose address is Palace Chambers, 9 Bridge Street, Westminster.

ACCORDING to the *Pioneer Mail*, Allahabad, an irrigation conference lasting four days will assemble at Simla on September 5. Some thirty papers on subjects covering a large range of irrigation practice have been promised, and it has been suggested that if time permits the following subjects shall also be discussed:—(1) The most suitable value of "N" in Kutter's formula, for use in designing channels. (2) American practice and the two or three notions described in Mr. Kennedy's recent report, paragraphs 15–18, circulated as technical paper No. 157. (3) Distribution of water by measurement. As a basis for discussion, the remarks of the Irrigation Commission in vol. i., paragraphs 275–290, and Mr. Kennedy's memorandum, published on pp. 59–63 of the appendix, vol. iv. of that report, may be studied. (4) Loss by absorption from channels.

AN International Exposition of Hygiene is about to be held in Paris. The following congresses will take place in connection with it, viz.:—life-saving, from August 25 to 31; public health, from September 10 to 20; fisheries, from October 1 to 10; social economy, from October 11 to 20; hygiene, from October 21 to 31; and tuberculosis at a later date.

A CONGRESS of climatotherapy and urban hygiene has been arranged for at Arcachon, France. It will be held from April 24 to 29, 1905, under the presidency of Prof. Renaud, of Lyons. The general secretary is Dr. Lalesque, of Arcachon. Communications relative to the congress should be addressed to Dr. Festal, Villa David, Arcachon.

ON the initiation of the Austrian Minister of Public Instruction, an International Congress of Botany is to be held in Vienna from June 10 to 18, 1905.

THE *Novoe Vremya* states that the Medical Department of the Caucasus has decided to disinfect all letters and parcels coming from Persia to guard against the spread of cholera from Persia to Russia, and that to assist the work three sanitary bacteriological sections (each consisting of a medical man, a medical woman, assistants and sanitary officers) have been fitted out with bacteriological laboratories, disinfectants and drugs, at the expense of the Discount and Loan Bank of Persia, which is a branch of the Russian Imperial Bank. The work of organising these bodies was carried out by the Institute of Experimental Medicine.

INDIAN papers report that a provincial museum is to be erected at Rangoon, and the proposal has been made that the collections at present in the Phayre Museum shall be handed over to the Government to be deposited in the new museum. It is also proposed that the proceeds of the sale of old materials shall be applied either in adding to the collection or towards the building of a portion of the provincial museum, and that the collection shall either be kept together and be called the Phayre collection, or that the name of Sir Arthur Phayre shall be connected with some part of the new building.

THE sum of 300*l*. recently voted by the New York State Legislature for cooperative hydrographic work with the U.S. Geological Survey will, it is stated in *Science*, be used in maintaining records of the rise and fall, the ordinary outflow, floods and droughts of many streams in the State. The work has gradually grown until there is hardly a section of the State in which some river is not systematically measured, and at the present time the condition of streams in more than fifty places in the State is regularly reported.

IT is stated in the American papers that an aquarium, costing from 600,000*l*. to 800,000*l*., is to be established in San Francisco by Dr. H. Tevis in memory of his late father, Mr. Lloyd Tevis, and that plans for the building are being prepared.

THE County Council of Aberdeen has voted for another year a grant of 200*l*. to enable the Agricultural Research Association of Aberdeen to prosecute its inquiry further into a function of latent plant food in soil.

ANOTHER line of steamers—the Allan—is to have an ocean newspaper published on board its vessels. The company has, it is stated, arranged with the Marconi Company to have the most important news transmitted to its boats crossing the Atlantic, both homeward and outward bound, as soon as they come within effective distance.

THE railway department of the Grand Duchy of Baden has, says *Engineering*, presented to the Museum of Masterpieces of Natural Science and Technics at Munich an interesting collection of drawings and plans from the early days of railways. The collection includes diagrams of the first passenger and goods cars of Baden from the years 1839 to 1841, of carriages of the Nürnberg-Fürth Railway of 1837, of the Taunus Railway of 1841, of the London and Birmingham line, and further detailed diagrams of the cars of the Elberfeld experimental railway of the year 1832.

IN the latter part of 1902 arrangements were made for the establishment of a mineralogical survey in Ceylon, to last for a period of three years, the objects in view being an examination of the occurrence of economic minerals in the island with the view of their further development, and the preparation of a report descriptive of the mineral resources, as well as the arrangement of the geological collections in the museum and the accumulation of further specimens, a duplicate series being reserved for exhibition at the Imperial Institute. The report of the director of the survey for 1903 has just reached us, and tells of much work done during the period under consideration. In 1903 the area examined amounted to 512 square miles, but, as is pointed out, the work of the survey can only partially be judged by area, as in the event of the examination of important economic minerals being necessary a prolonged stay in one area may be required. At the conclusion of his report the director asks for a special grant of 1000 rupees to enable him to procure a collection of gems for the museum, the present collection being poor.

THE nature and importance of the work accomplished by the director of the Royal Botanic Gardens, Ceylon, and his staff may be judged from the report issued for last year, from which it is evident that the scientific staff is kept continuously busy in dealing with numerous inquiries and with the investigation of various horticultural problems. At the principal experiment station, Peradeniya, the treatment of cacao canker has occupied considerable attention, also the value of different manures for tea plantations, and of green manures generally. The branch garden at Nuwara Eliya has been utilised for the purpose of experimenting with grasses and fruit trees upon the patana soil, and a new area of 150 acres has been reserved in the dry zone at Mahailuppalana, where cotton has already been planted, and later the cultivation of rubber and cacao under irrigation will be tried. The Government chemist, Mr. Kelway Bamber, has made an important discovery of a trustworthy test which will determine the amount of adulteration in citronella oil.

IT is instructive to have the opinion of a zoologist on the results obtained by Prof. de Vries in his experiments on the production of new plant species. Prof. A. W. Hubrecht has contributed a critical review to the *Popular Science Monthly* for July which is interesting not only because it discusses the essential points of de Vries's theory, but also because the writer takes considerable trouble to show that the mutation theory modifies, but is not opposed to, the views expressed in the "Origin of Species."

IN an article contributed to the *Journal of Botany* (July) Mrs. Gepp contrasts the sporangia of *Halimeda gracilis* with those of *Halimeda Tuna,* and describes the methods of communication between the central filaments in the thallus which serve as a basis for a systematic arrangement of the genus. In the same number Canon Lett describes a new hepatic, *Adelanthus dugortiensis*, from Ireland which appears to represent an ancient flora, since it has affinities with a group of hepatics found in hot climates.

AN elaborately illustrated "Catalogue of Exhibits of Insect Enemies of Forests and Forest Products" at the Louisiana Exposition has just been issued by the U.S. Department of Agriculture (division of entomology), and will well repay perusal by economic entomologists and all who have to do with forestry operations. The catalogue has two indices, one of scientific and the other of common names.

THE issue of the *Proceedings* of the Philadelphia Academy for the latter part of April and May contains several papers of interest. Among them is one by Mr. J. P. Moore on polychætous annelids from California, and a second, by Dr. H. C. Chapman, on the anatomy of the hyrax, in the course of which he raises the question whether the so-called "coney" of the Bible is really the Syrian representative of that group. Of more importance is the article by Mr. A. E. Brown on post-Glacial Nearctic centres of dispersal for reptiles, the title of which has been previously quoted in our columns. The absence in post-Glacial times of a circumpolar reptile fauna renders the retention of a Nearctic and a Palæarctic region convenient when discussing the distribution of this class, although this is no bar to the merging of the two into a Holarctic region for general purposes. Their present distribution points to two post-Glacial centres of dispersal for Nearctic reptiles, one in the south-eastern Austro-riparian, and the other in the Sonoran province, and temperature and humidity have been important factors in regulating such dispersals.

VOL. xl., No. 2, of the *Proceedings* of the American Academy contains an elaborate essay by Mr. G. M. Allen on the heredity of the colour of the coat in domesticated breeds of the common mouse, as illustrative of Mendelian principles. The language now used in studies of this description is so excessively technical that it is almost impossible to give a summary of the author's conclusions which would be intelligible to the ordinary reader. It has been found, however, that complete albinism is a character "recessive" towards pigmentation. The grey of the common mouse (composed of black, chocolate, and yellow) is predominant over the colours of the "fancy" breeds, so that when the latter are crossed with wild mice grey offspring result. Black mice breed true, and the "golden-agutis" also generally do the same, but may give rise to chocolate forms. The predominant grey may be produced synthetically by crossing blacks with golden-agutis, the three pigments of the former being thus brought together. Finally, black, chocolate, and the golden-aguti strains may be produced by a resolution of the original compound grey.

ANOTHER short communication to hand this week, from Reichenow's *Ornithol. Monatsberichte* for July and August, contains a continuation of Dr. J. Thienemann's observations on the birds of Rositten, dealing in this instance with the members of the crow family. The author takes the opportunity of thanking all who have assisted him in his investigations, and begs for the continuance of their kind help.

MR. L. W. LAMBE has sent us a short extract from the *Ottawa Naturalist* for 1904 in which he discusses the nature of the squamoso-parietal crest in two species of horned dinosaurs from the Alberta Cretaceous.

WE have received a copy of a paper by Mr. G. H. Carpenter on injurious insects and other animals observed in Ireland during 1903, forming No. 12, part v., of the first volume of *Economic Proceedings* of the Royal Dublin Society. As was observed during the preceding year, the grubs of crane-flies (Tipulæ) are the most serious insect enemies against which the Irish farmer has to contend, although the potato-flea-beetle (*Psylliodes affinis*) did some amount of harm.

THE contents of the *Entomologist* for June include descriptions of new South American beetles of the genus Chlamys by M. Jacoby, a paper on new African butterflies of the family Lycænidæ by Miss Sharpe, a supplementary list of Lepidoptera from Capri by Mr. C. S. Browne, and the continuation of a paper by Mr. P. Cameron on various new forms of Hymenoptera.

PROF. SIMON NEWCOMB has applied mathematical analysis to an inquiry into the probability of the causes of the production of sex in human offspring. In the entire Semitic race, over the whole of Europe and America, there is a small and uniform preponderance of male over female births. There is thus on the whole a unisexual tendency in the male direction among parents of the Semitic race. In isolated families the unisexual tendency becomes more marked and may be in either direction; in some families the offspring may be either mainly male or mainly female. Among the negro race the preponderance of male over female births is either quite small or non-existent. Prof. Newcomb, analysing the data by the method of probabilities, concludes that the sex is not determined at any one moment or by any one act, but is the product of a series of accidental causes, that the functions of the father have probably little influence, the sex being determined wholly by the mother, and that it seems in the highest degree unlikely that there is any way by which a parent can influence the sex of his or her offspring. The first-born child of any mother is more likely to be a male in the proportion of about 8 to 7, and there is probably a smaller preponderance in the case of the second child, but there is no conclusive evidence that after a mother has had two children there is any change in her tendencies.

In the *Monthly Review* for August Mr. J. E. S. Moore discusses "the cancer problem to-day," in which he details recent investigations into the cytology of malignant growths; and in the *Fortnightly Review* Dr. Alfred Mumford writes on the alleged physical degeneration of the race. The general trend of this article is that the deterioration in the vigour and health of the British race as a whole has been exaggerated, and that all the combined effort of the past for the permanent improvement of the race cannot have been without result.

At a special meeting of the Academia dei Lincei held on June 5, the results of the competition, which closed on December 31, 1902, for the royal prizes of the academy were made known. In the section of philology, a royal prize is awarded to Prof. A. Trombetti for a work on the genealogical connection between the languages of the ancient world. The prize for astronomy is divided between Prof. E. Millosevitch and Vincenzo Reina, and that for philosophical science between Prof. Sante Ferrari and Prof. Covotti. To celebrate the tercentenary of the academy, which is the oldest institution of its kind in the world, it is announced that Prof. Pirotta is preparing for publication the botanical works of Prince Federico Cesi, who, with Galileo Galilei, founded the Lincei in 1603.

In the *Physikalische Zeitschrift* (No. 15) H. Mache concludes that the emanation from the Gastein thermal spring, which is so strongly radio-active, is identical with that of radium, as the activity of both emanations decays according to the same law. Moreover, the activity induced in other bodies by the emanation from the water is of the same character as that caused under similar conditions by radium. In the same number E. F. Burton shows that the diminution in the conductivity of air enclosed in a metal vessel which is produced by surrounding the vessel with water is proportional to the thickness of the aqueous layer. The view that the radiations causing the discharge come from an external source is thus confirmed. It is also shown that, on diminishing the pressure of air in the vessel surrounded by water, the conductivity falls off continuously with the change of pressure.

In the *Physical Review* for June, E. L. Nichols and Ernest Merritt give an experimental confirmation of Lommel's contradiction of Stokes's law that, in fluorescence, the fluorescent light is always of greater wave-length than the exciting light. The variation in the intensity of the light throughout the fluorescence spectra of such substances as fluorescein, eosin, and naphthalene-red was measured by means of a spectrophotometer, and it is shown that, whatever be the wave-length of the exciting light, the curve connecting intensity of light with wave-length in the fluorescence spectrum is always of the same character. The maximum of intensity in the excited spectrum may have a wave-length much smaller than that of the exciting source. Thus in the case of eosin, with an exciting light of wave-length λ 585–605, the maximum in the fluorescence spectrum is at λ 580, the whole spectrum extending from λ 535 to λ 640.

Part ii. of the *Bulletin* of the French Physical Society for 1904 contains a description by A. Turpain of a new apparatus for cleaning large quantities of mercury. The cleaning agent is a solution of mercurous nitrate, and the mercury, after being cleaned, is dried by means of concentrated sulphuric acid, any free acid in the mercury being subsequently removed by potash. The apparatus works automatically during long periods, and needs little attention.

In the July number of the *American Journal of Science* Mr. H. A. Bumstead describes experiments on atmospheric radio-activity, which indicate that the activity acquired by a negatively charged wire exposed in the open air at New Haven, is of a two-fold character. From the rate of decay it is concluded that thorium as well as radium excited activity is present. With a three-hour exposure of the wire, 3 to 5 per cent. of the initial effect is due to the thorium activity, and with a twelve-hour exposure the thorium activity is sometimes 15 per cent. of the whole. Messrs. Trowbridge and Rollins communicate that the electrical resistance of an aluminium wire is not altered to a measurable extent when subjected to the action of radium.

The *Geographical Journal* for August contains a very clear map showing the work of the National Antarctic Expedition. The map is the work of Lieut. Mulock, R.N., who joined the *Discovery* from the *Morning* in February, 1903. The positions fixed by observations, magnetic variations, soundings, heights, and the tracks of the sledge travellers are clearly shown, as well as the track of the ship to her furthest point along the coast of King Edward VII. Land. An inset map shows the position of the discoveries with reference to the circumpolar area. The same number also contains the paper on "The German Antarctic Expedition" which was read before the Royal Geographical Society in April last by Dr. E. von Drygalski. It is illustrated by some remarkable reproductions of photographs of icebergs, &c.

The current *Century Magazine* contains two contributions which should be of interest to all students of nature, one, by that careful American observer, John Burroughs, on "What do Animals Know?" in the course of which a good deal of out-of-the-way knowledge is given in a charming manner, the other, illustrated by some striking engravings (one in colour), on "The Colossal Bridges of Utah," which deals with the wonderful arches or natural bridges that are to be found near the head of White Cañon, in San Juan County, Utah. One of these bridges, named by the discoverers the Caroline, measures two hundred and eight feet six inches from buttress to buttress across the bottom of the cañon. Its height is one hundred and ninety-seven feet from the surface of the water, while its thickness at its highest point is one hundred and twenty-five feet. The floor of the bridge is one hundred and twenty-seven feet wide, so that, as is pointed out, an army could march over it in columns of companies, and still leave room at the side for a continuous stream of artillery and baggage waggons. Two other magnificent bridges, named respectively the Augusta Bridge and the Little Bridge, are described and figured in the article, which is well worth perusal.

OUR ASTRONOMICAL COLUMN.

Ephemeris for Encke's Comet.—A set of elements for Encke's comet, corrected only for the Jupiter perturbations of the first order between 1901 and 1904, is published by MM. Kaminsky and Ocoulitsch in No. 3962 of the *Astronomische Nachrichten*. These elements are given below, together with an extract from a daily ephemeris for the period August 1 to October 16:—